

## CLAIMS

1. Use of a preparation of an active enamel substance for the preparation of a pharmaceutical composition for the formation or regeneration of dentin following dental procedures involving exposure of vital dental pulp tissue.  
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2. Use according to claim 1 for the regeneration of secondary dentin in vital dental pulp tissue.
3. Use according to claim 1 for the formation of reparative dentin or osteodentin in vital  
10 dental pulp tissue.
4. Use according to claim 1 for promoting dentin formation in vital dental pulp tissue in  
erupted teeth.
- 15 5. Use according to claim 1, wherein the preparation of active enamel substance is applied onto dental pulp before application of a filling material following dental procedures involving exposure of vital dental pulp tissue.
- 20 6. Use according to any of claims 1-5, wherein the active enamel substance is enamel matrix, enamel matrix derivatives and/or enamel matrix proteins.
7. Use according to claim 6, wherein the active enamel substance is selected from the group consisting of enamelin, amelogenins, non-amelogenins, proline-rich non-amelogenins, amelins (ameloblastin, sheathlin), tuftelins, DSP, DSPP, and derivatives  
25 thereof and mixtures thereof.
8. Use according to claim 6, wherein the active enamel substance has a molecular weight of at the most about 120 kDa such as, e.g., at the most 100 kDa, 90 kDa, 80 kDa, 70 kDa or 60 kDa as determined by SDS-PAGE electrophoresis.  
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9. Use according to any of claims 6-8, wherein the preparation of an active enamel substance contains a mixture of active enamel substances with different molecular weights.

10. Use according to claim 9, wherein the preparation of an active enamel substance comprises at least two substances selected from the group consisting of amelogenins, proline-rich non-amelogenins, enamelins, tuftelin, tuft proteins, serum proteins, salivary proteins, amelin, ameloblastin, sheathlin, DSP, DSPP, and derivatives thereof.

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11. Use according to any of claims 6-10, wherein the active enamel substance has a molecular weight of up to about 40,000.

12. Use according to claim 11, wherein the active enamel substance has a molecular weight of between about 5,000 and about 25,000.

10 13. Use according to claim 12, wherein the major part of the active enamel substance has a molecular weight of about 20 kDa.

15 14. Use according to any of claims 6-13, wherein at least a part of the active enamel substance is in the form of aggregates or after application in vivo is capable of forming aggregates.

20 15. Use according to claim 14, wherein the aggregates have a particle size of from about 20 nm to about 1 µm.

16. Use according to any of claims 6-15, wherein the protein content of the active enamel substance in the preparation is in a range of from about 0.05% w/w to 100% w/w such as, e.g., about 5-99% w/w, about 10-95% w/w, about 15-90% w/w, about 20-90% w/w, about 25 30-90% w/w, about 40-85% w/w, about 50-80% w/w, about 60-70% w/w, about 70-90% w/w, or about 80-90% w/w.

17. Use according to any of claims 1-16, wherein the preparation of the active enamel substance is in freeze-dried form.

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18. Use according to any of claims 1-16, wherein the pharmaceutical composition further comprises a pharmaceutically acceptable excipient.

35 19. Use according to claim 18, wherein the pharmaceutically acceptable excipient is propylene glycol alginate.

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20. Use according to claim 18, wherein the pharmaceutically acceptable excipient is hyaluronic acid or salts or derivatives thereof.
- 5 21. Use according to any of claims 1-20, wherein the pharmaceutical composition comprises about 30mg/ml active enamel substance in propylene-glycol-alginate (PGA).
22. Use of a pharmaceutical composition obtainable from a use according to claim 21, or any proteins or peptides contained therein, for the formation or regeneration of dentin
- 10 following dental procedures involving exposure of vital dental pulp tissue.
23. A method of promoting the formation or regeneration of dentin following dental procedures involving exposure of vital dental pulp tissue, the method comprising applying an effective amount of an active enamel substance on exposed vital dental pulp tissue after
- 15 dental procedures.
24. The method of claim 23, wherein the application of the active enamel substance is followed by application of a filling material.
- 20 25. The method of claim 23, which is for the regeneration of secondary dentin in vital dental pulp tissue.
26. The method of claim 23, which is for the formation of reparative dentin or osteodentin in vital dental pulp tissue.
- 25 27. The method of claim 23, which is for promoting dentin formation in vital dental pulp tissue in erupted teeth.
28. The method of any of claims 23-27, wherein the active enamel substance is applied in
- 30 an amount of total protein per  $\text{cm}^2$  area of affected dental pulp tissue, corresponding to from about  $0.005 \text{ mg/cm}^2$  to about  $5 \text{ mg/cm}^2$ , such as from about  $0.01 \text{ mg/cm}^2$  to about  $3 \text{ mg/cm}^2$ .